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Fig. 26. Antenna of first larval stage.

Fig. 27. Anal plates of the same.

*Takahashia citricola* sp. nov.

Fig. 28. Female, natural size.

Fig. 29. The same, enlarged.

Fig. 30. Antennæ of the same.

Fig. 31. Leg of the same.

Fig. 32. Marginal and stigmatic spines of the same.

Fig. 33. Anal plates.

PLATE IX.

*Chionaspis kinoshinensis* sp. nov.

Fig. 34. Female scale from above.

Fig. 35. The same from below.

Fig. 36. Female.

Fig. 37. Last abdominal segment of the same.

*Mytilaspis buzenensis* sp. nov.

Fig. 38. Female scale from above.

Fig. 39. The same from below.

Fig. 40. Male scale from above.

Fig. 41. Last abdominal segment of female.

*Mytilaspis uniloba* sp. nov.

Fig. 42. Scale of female from above.

Fig. 43. Female from below.

Fig. 44. Antenna of the same.

Figs. 45, 45a. Last abdominal segment of the same.

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## COCCIDÆ OF JAPAN (IV). A LIST OF COCCIDÆ FROM THE BONIN ISLANDS (OGASAWARA- JIMA), JAPAN.

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(WITH PLATES X-XII.)

The following species of Coccidæ or scale insects were collected by the writer in the Bonin Islands, where he was sent by the Department of Agriculture and Commerce for the purpose of investigating the migratory locust of the islands, in the summer of 1907.

The most striking feature of the collection is the comparative cosmopolitan character of the species. Not a single species peculiar to the islands was found; even the new species described below being all closely allied to well-known and widely distributed forms. The species affecting fruit trees (*Citrus*, etc.) were introduced with nursery stock quite recently.

The writer is under great obligation to Prof. T. D. A. Cockerell, for kindly revising his manuscript.

1. *Lecanium* (*Saissetia*) *hemisphæricum* L.

On *Coffea arabica*, "Shirotsugi," "Shiroki," *Boehmeria densiflora*.

*Other Localities*.—Europe, New Zealand, Australia, Mauritius, Hawaii, Galapagos, Brazil, United States, Mexico, mainland of Japan.

2. *Lecanium* (*Saissetia*) *nigrum* Nietn.

On *Boehmeria densiflora*, *Terminalia catappa*, *Celtis sinensis*, *Solanum melongena*, "Shirotsugi."

*Other Localities*.—Ceylon, India, Demerara, Mauritius, Hawaii, Grenada, Br. Guiana, Barbados, Trinidad, Porto Rico, Australia, New Zealand, mainland of Japan.

3. *Lecanium* (*Coccus*) *hesperidum* L.

On *Ardisia sieboldi*, *Hibiscus tiliaceus* var. *glabra*.

*Other Localities*.—Europe, New Zealand, S. Africa, Hawaii, Chili, Mexico, Algeria, West Indies, United States, Canada, mainland of Japan.

4. *Lecanium* (*Coccus*) *frontale* Green.

On "Shirotsugi."

*Other Localities*.—Ceylon.

5. *Pulvinaria aurantii* Ckll.

On *Citrus* sp. Very badly infested by a fungus.

*Other Localities*.—Mainland of Japan.

6. *Ceroplastes floridensis* Comst.

On a species of willow? Not common.

*Other Localities*.—United States, Mexico, West Indies, Hawaii, Ceylon, India, Brazil, Darjeeling, Assam, Australia, mainland of Japan.

7. **Aspidiotus (Chrysomphalus) ficus** Ashm.

On *Citrus decumana*, *C. aurantium*, *Ardisia sieboldi*, *Artocarpus integrifolia*, *Citrus medica*, *Ligustrum medium*, "yellow wood."

*Other Localities*.—Europe, Egypt, Ceylon, India, Mauritius, Natal, Australia, Brazil, Jamaica, Barbados, United States, Mexico, mainland of Japan.

8. **Aspidiotus (Chrysomphalus) aurantii** Mask.

On *Ligustrum japonicum*, *Artocarpus integrifolia*.

*Other Localities*.—S. Europe, Syria, Natal, Cape Colony, Mauritius, Ceylon, China, Australia, New Zealand, Samoa, New Caledonia, Fiji, Hawaii, West Indies, United States, mainland of Japan.

9. **Aspidiotus (Odonapis) secretus** Ckll.

On *Arundinaria sineoni*.

*Other Localities*.—Hawaii, mainland of Japan.

10. **Aspidiotus cydoniæ** Comst.

On *Pyrus sinensis*, *Melia japonica*.

*Other Localities*.—United States, Mexico, West Indies, Ceylon, Samoa, mainland of Japan. It seems to the writer that the scale of the female is somewhat smaller than in the typical form, and may be it is a new variety. Owing to the very few specimens, the writer could not make any farther study.

11. **Aspidiotus rapax** Comst.

On *Celtis sinensis*, *Canavallia ensiformis*, *Syzygium cleyeræfolium*, *Pyrus malus*, *Artocarpus integrifolia*?, *Cinnamomum pedunculatum*, *Ficus variolosa*.

*Other Localities*.—United States, West Indies, Brazil, Europe, Hawaii, New Zealand, S. Africa, Australia, Natal, Yokohama, Japan.

Somewhat smaller than the typical California specimens.

12. **Fiorinia floriniæ?** Targ.

On *Artocarpus integrifolia*?

13. **Fiorinia** sp.

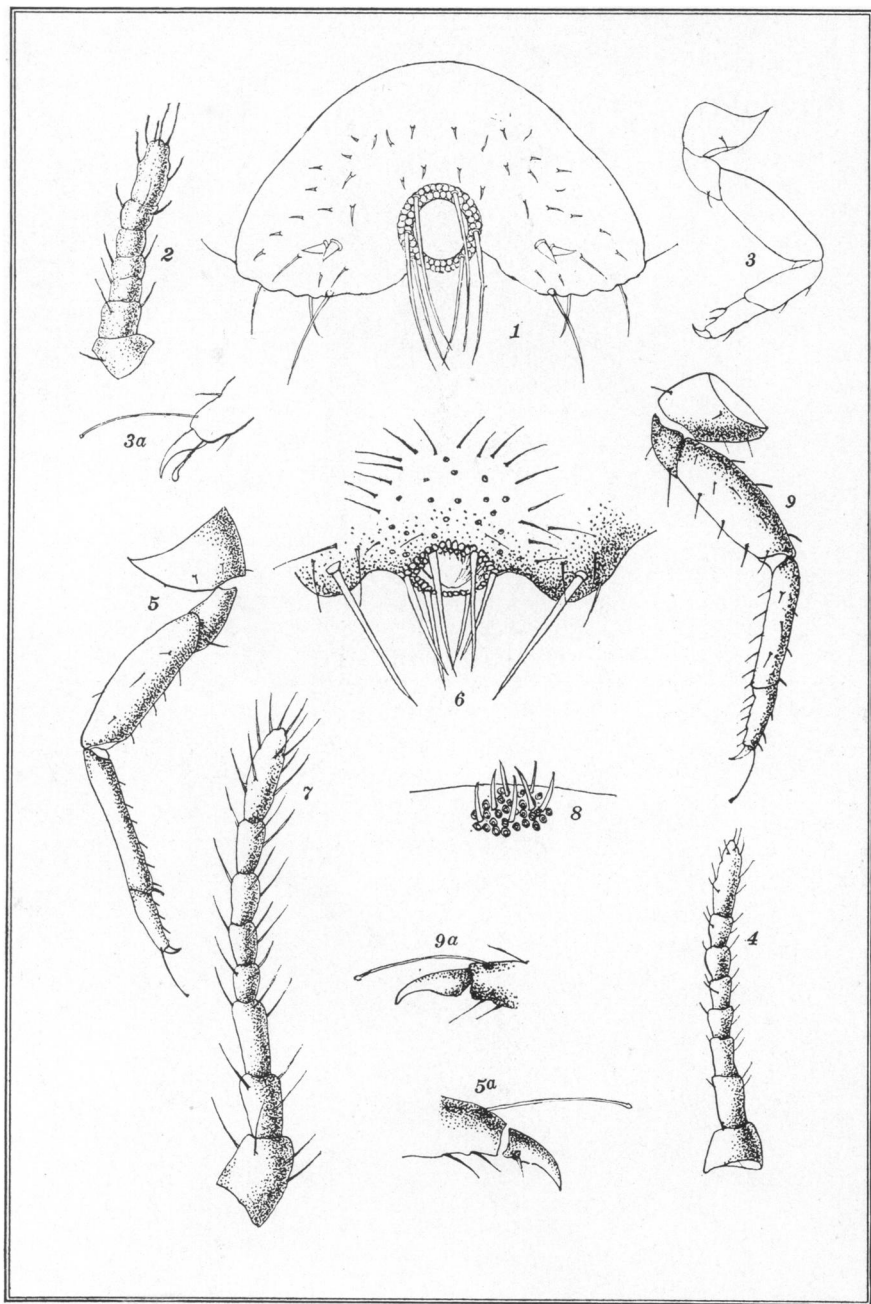
On *Pinus luchuensis*.

Very few specimens which could not be further studied.

14. **Parlatoria proteus** Curt.

On *Citrus* sp.

*Other Localities*.—Europe, United States, Australia, China, Brazil, Hawaii, mainland of Japan.



Japanese Coccidae.

**15. *Mytilaspis pallida* Green.**

On *Citrus* sp.

*Other Localities.*—Ceylon, Hawaii, mainland of Japan.

**16. *Howardia biclavis* Comst.**

On *Celtis sinensis*, *Osteomeles anthyllidifolia*, *Thea japonica*, *Photinia wrightiana*, *Papaia*, *Olea europæa*, *Hibiscus tiliaceus*, *Trachelospermum jasminoides*, "Chigi," *Sideroxylon ferrugineum*, *Maba buxifolia*, *Artocarpus integrifolia*?, *Terminalia catappa*, *Diospyros kaki*, *Syzygium cleyeræfolium*, "Komaiki," *Lagerstræmia indica*, *Sideroxylon* sp., *Punica granatum*.

*Other Localities.*—United States, West Indies, Tahiti, Ceylon, Hawaii, Mauritius, Europe.

Although this species has been recorded from Japan and elsewhere, the writer has not as yet seen it in his native country.

The following species are here formally described as new :

**17. *Ripersia agasawarensis*, new species. (Pl. X. Figs. 1-3.)**

*Adult Female.*—Elongate oval in form, flat; pinkish purple in color. Antennæ and legs well formed, but small. Antenna 7-jointed; joint seven the longest; formula 7, 2, (6, 1), 4, 5, 3; each joint with a few hairs. Legs subequal; tibia almost twice as long as the length of tarsus; digitules of tarsus fine hairs, those of claw stout and short; claw slender and curved. Anal lobes with two conical spines and about three long hairs. Anal ring with six long hairs. Length about 4 mm., width about 2 mm.

On *Miscanthus* sp.

This species is allied to *Ripersia japonica* Kuw., but differs in having two strong conical spines on the anal lobes and in the shape of the antennæ.

**18. *Dactylopius (Pseudococcus) boninsis*, new species. (Pl. X. Figs. 4-5.)**

*Adult Female.*—Elongate oval; color reddish gray, covered with heavy white powder; abdominal segments distinct. Antennæ and legs large, well formed. Antenna 7- or 8-jointed, usually the latter; in this case, the eighth joint is the longest and the fourth the shortest, the rest of nearly equal length; formula 8, 2, 3, 1, (6, 7), 5, 4. Legs stout and longer than antennæ. Three pairs subequal, but the first pair is much smaller than the others; with rather fine hairs; tibia more than twice the length of the tarsus; digitules of tarsus fine hairs, those of claw spiny; claw large, curved. Anal lobes normal, each with two strong spines and many long fine hairs surrounded with small spinnerets. Anal ring small, with six hairs. Dermis with minute hairs and small circular spinnerets. Length about 4.5 mm., width about 2.5 mm.

On sugar cane.

This species is closely allied to *D. calceolaria* Mask, in general form, but differs in having long and rather slender antennæ and legs. The anal ring is also much smaller than that of *D. calceolaria*.

**19. *Dactylopius (Pseudococcus) ananassæ*, new species.** (Pl. X. Figs. 6-9.)

*Adult Female*.—Broadly oval in form; reddish brown in color; covered with white powder; abdominal segments distinct. Antennæ very long; 8-jointed, joint eight the longest, joint one always very broad; formula 8, 3, (1, 2), 7, 6, 5, 4; each joint with many strong hairs. Legs subequal, very stout, hairy; tarsus much shorter than tibia; claw large, curved; digitules of tarsus long hairs, those of claw could not be recognized by the writer. Anal lobes distinct, each lobe with one long and a few fine hairs; anal ring with six prominent hairs. Dorsum with fine hairs and many small circular spinnerets. Length about 3 to 4 mm., width about 2 to 2.5 mm.

On pineapple.

This species closely resembles in form and general characters of antennæ and legs *D. bromelia* Brom., but the latter is much smaller.

**20. *Lecanium (Saissetia) sideroxylium*, new species.** (Pl. XI. Figs. 10-17.)

*Adult Female*.—Suboval in form, anterior edge slightly narrowed, convex. Dorsum with a slight median ridge. Color chestnut brown, almost black. Antennæ usually 8-, sometimes only 7-jointed; third joint the longest, fifth joint the shortest; last few joints with many long hairs; formula 3, (8, 4), 2, 6, 7, 1, 5. Legs well-formed, subequal, slender; tibia and tarsus almost equal in length; claw and digitules normal. Stigmatic cleft deep, with three spines, one long and two short; marginal spines rather large, flattened at extremity, the flattened edge deeply emarginate. Anal cleft deep, the two edges almost united; anal plates large, outer angle round, four large and long spines near inner angle and two short ones near apex. Derm closely covered with a conspicuous tessellation of irregularly polygonal cells, each with a median pale oval spot and a minute translucent pore in the center. Length about 4 mm.

On *Sideroxylon ferrugineum*.

This species is distinguished from *L. nigrum* Niatn., by a median ridge on the dorsum and by the shape of antennæ.

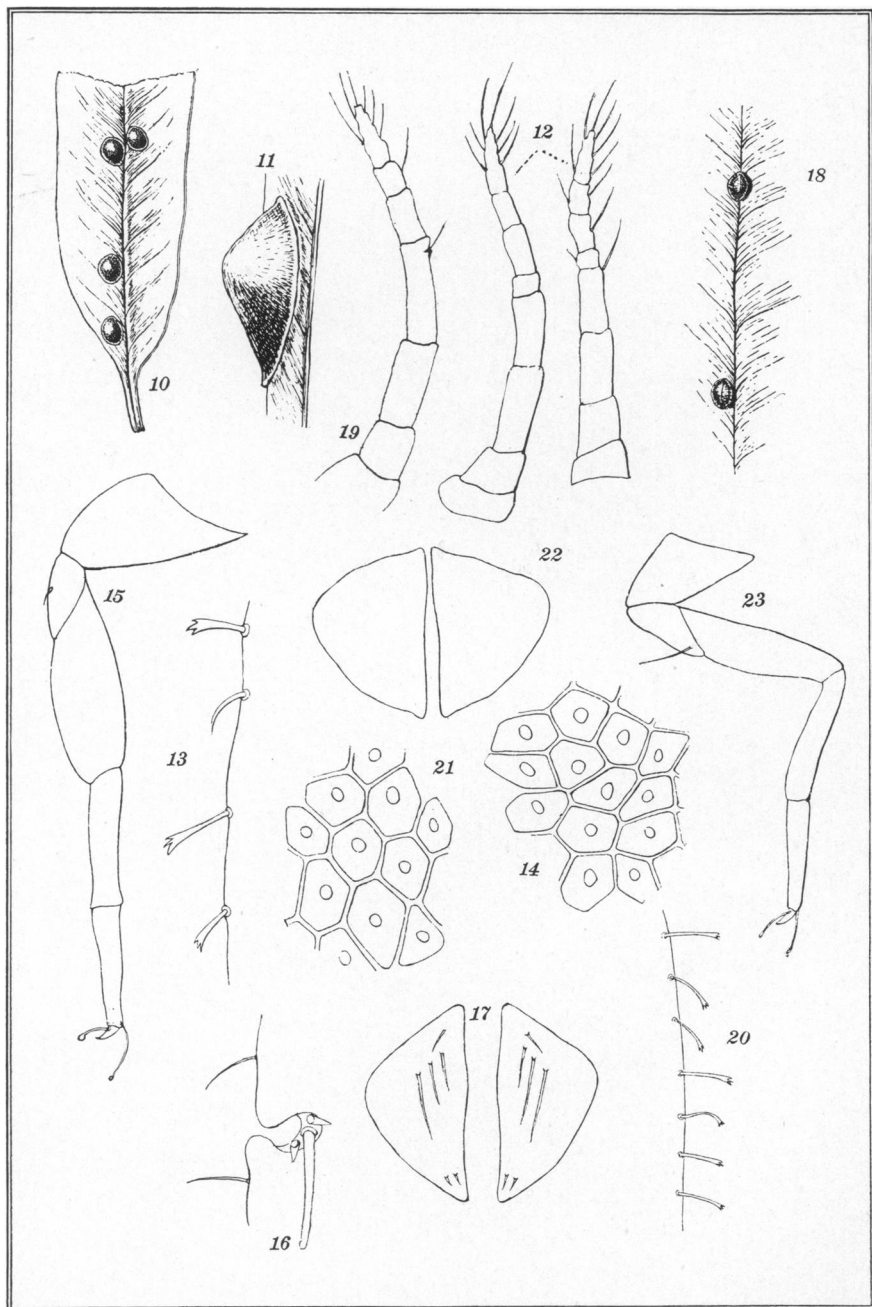
**21. *Lecanium (Saissetia) pseudonigrum*, new species.** (Pl. XI. Figs. 18-22.)

This species is allied to *L. nigrum*, but differs in the following characters: Very flat, margin sinuous, a slight median ridge and many transverse wrinkles. Length about 3.5 mm. Antennæ 7-jointed; joint four the longest; formula 4, 3, 7, 5, 2, 1, 6.

On "Shirotsugi."

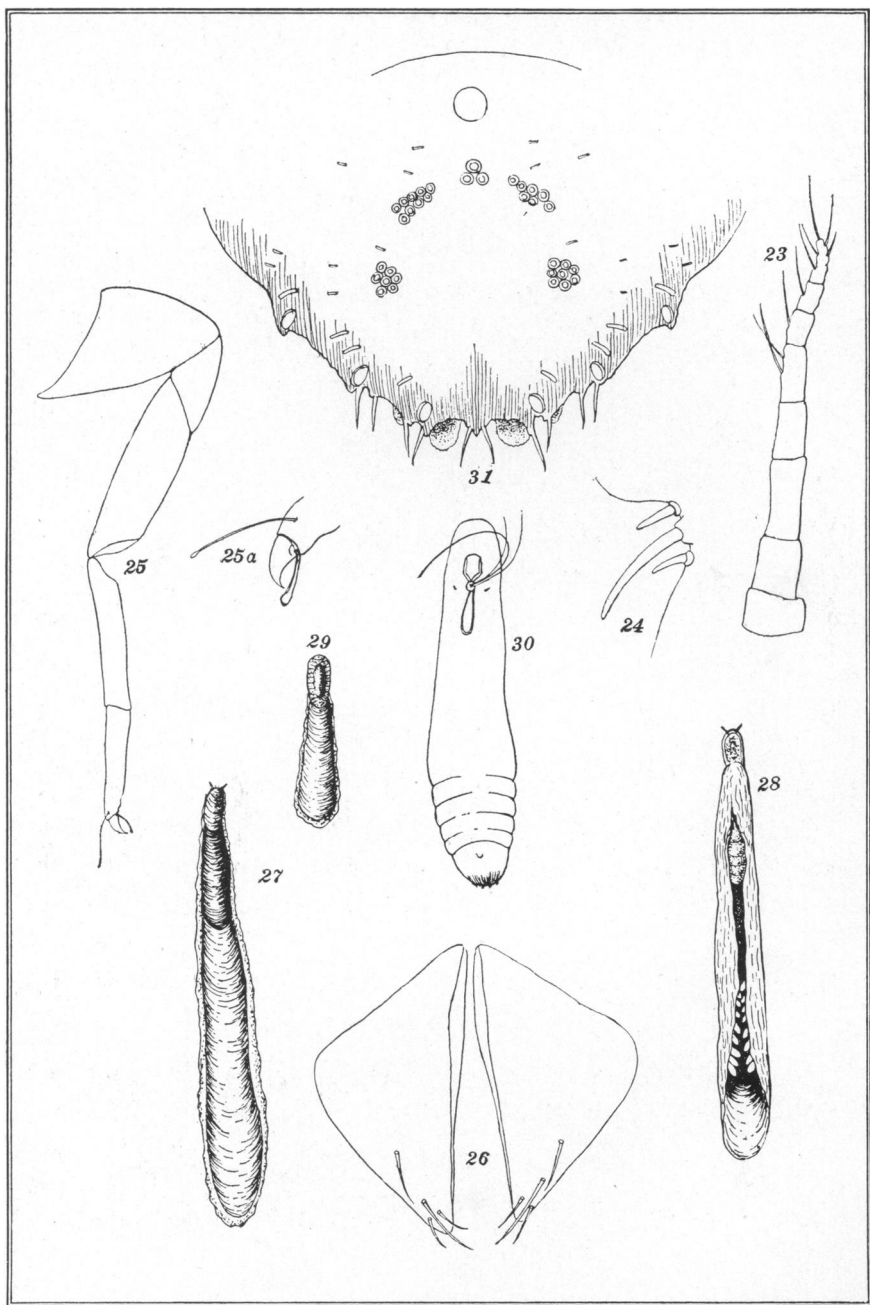
**22. *Lecanium (Coccus) celtium*, new species.** (Pl. XII. Figs. 23-26.)

*Adult Female*.—Elongate in outline, convex; pale brown or yellowish brown in color. Antennæ and legs well-formed, but small. Antenna 8-jointed:



Japanese Coccidae.





Japanese Coccidae.

joint three the longest; formula 3, 4, (2, 5), 8, 6, 7, 1. Legs subequal, tibia longer than tarsus, claw stout and curved, digitules as usual. Marginal spines simple and pointed; stigmatic cleft not so deep, with one long and two short spines. Anal plates large, and broad; outer edge a little longer than base; outer angle round; with four strong spines near apex. Length about 6.5 mm., width about 3 mm.

On *Celtis sinensis*.

This species resembles, in general form, *L. longulum* Douglas, but differs in the formula of the antenna and in the shape of the anal plates.

**23. *Mytilaspis (Lepidosaphus) arii*, new species.** (Pl. XII. Figs. 27-31.)

*Female Scale*.—Very long and narrow, straight, sides parallel, with a narrow, flattened border. Color more or less variable, but usually yellowish brown. Pellicles paler than the scale, occupying about one fourth of the total length of the scale; first exuvia pale yellow, segmentation distinct, about .4 mm.; second exuvia much longer, about .7 mm., posterior end yellow. Ventral scale whitish, well developed, with median longitudinal division attached a little with the margin. Length about 3.5 to 4 mm., width about .4 mm.

*Male Puparium*.—Resembles that of female, but is much smaller; color pale, with white, flattened border. Pellicle yellow; ventral scale complete. Length about 1 mm.

*Adult Female*.—Elongate in form, lateral margins straight and approximately parallel. The last abdominal segment presents the following characters. The anterior group of spinnerets consists of three, the anterior laterals of about seven to ten, and the posterior laterals of about seven to nine. The median lobes are very large and wide, with the sides nearly parallel; the second lobe very small, sometimes wanting. The plates are well formed, simple, two between median lobes, two between first and second lobes, and two beyond the second lobe. Spines as usual, and one on the base of each lobe. Length about 1.5 mm.

On *Miscanthus* sp.

This species is allied to *M. gloveri* Pack, but differs in having an unusually long, filiform female scale and a small second lobe. Named after Mr. K. Ari, the governor of the islands.

EXPLANATION OF PLATES.

PLATE X.

*Ripersia ogasawarensis* sp. nov.

1. Abdominal end of female.
2. Antenna of the same.
3. Leg of the same.

*Dactylopius boninesis* sp. nov.

4. Antenna of female.
- 5, 5a. Leg of the same.

*Dactylopius ananassæ* sp. nov.

6. Abdominal end of female.
7. Antenna of the same.
8. A group of spines from the lateral aspect of abdominal segment.
9. Leg of the same.

## PLATE XI.

*Lecanium sideroxylium* sp. nov.

10. Female on the host plant (natural size).
11. The same, enlarged.
12. Antennæ of the same.
13. Marginal spines of the same.
14. Marking of derm of the same.
15. Leg of the same.
16. Stigmatic spines of the same.
17. Anal plates of the same.

*Lecanium pseudonigrum* sp. nov.

18. Female on host plant (natural size).
19. Antenna of the same.
20. Marginal spines of the same.
21. Marking of derm of the same.
22. Anal plates of the same.

## PLATE XII.

*Lecanium celtium* sp. nov.

23. Antenna of female.
24. Stigmatic spines of the same.
- 25, 25a. Leg of the same.
26. Anal plates of the same.

*Mytilaspis arii* sp. nov.

27. Female scale from above.
28. The same from below.
29. Male scale from above.
30. Female.
31. Last abdominal segment of the same.